Before the
Federal Communications Commission
Washington, D.C. 20554

PR Docket No. 92-125

In the Matter of

Amendment of the Aviation Rules (Part 87) to authorize the use of the frequency 406.025 MHz for Emergency Locator Transmitters (ELTs) — RM-7611

REPORT AND ORDER
(Proceeding Terminated)

Adopted: May 3, 1993; **Released: May 13, 1993**

By the Commission:

I. INTRODUCTION

1. This Report and Order amends Part 87 of the Rules, 47 C.F.R. Part 87, to authorize the use of the frequency 406.025 MHz for emergency locator transmitters (ELTs) on aircraft.[1] This action also adopts standards for 406 MHz ELTs similar to those governing emergency position indicating radiobeacons (EPIRBs).

II. BACKGROUND

2. Emergency radiobeacons designed to transmit distress signals on 121.500 MHz and 243.000 MHz[2] (hereafter 121.5 MHz ELTs) transmit continuous signals that are amplitude modulated with an audio swept tone and provide distress alerting and guidance (homing) assistance in emergency situations. Emergency radiobeacons designed to transmit distress signals on 406.025 MHz (hereafter 406 MHz ELTs) transmit short, digital signals to provide distress alerting and homing assistance in emergencies. Additionally, the digital signal in a 406 MHz ELT contains information regarding the type of emergency, the country and identification code of the aircraft in distress, and other information to facilitate search and rescue (SAR) operations.

3. The United States, Canada, France and the Soviet Union launched COSPAS/SARSAT[3] satellites which monitor wide areas of the globe for distress signals on 121.500 MHz, 243.000 MHz, and 406.025 MHz. Signals from 121.5 MHz ELTs can only be detected and relayed to SAR personnel when a COSPAS/SARSAT satellite is in range of both the 121.5 MHz ELT and a rescue coordination center (RCC). There are, therefore, "blind spots" where distress signals from 121.5 MHz ELTs can not be relayed to an RCC. The 406.025 MHz signals, however, can be detected and stored on COSPAS/SARSAT satellites and retransmitted to RCCs when satellites are in range.

4. The National Oceanic and Atmospheric Administration of the United States Department of Commerce (NOAA) requested the Commission to authorize the use of the frequency 406.025 MHz for ELTs.[4] NOAA is responsible for operating the Mission Control Center that detects and computes the location of emergency beacons using the COSPAS/SARSAT satellite system. The COSPAS/SARSAT satellite system has progressed to a fully operational international system with 18 nations participating and is capable of detecting and computing the location of 406 MHz radiobeacons. According to NOAA, the system was instrumental in the rescue of 1,607 people as of October 30, 1990. NOAA indicated that potentially greater benefits would be derived from the implementation of the 406.025 MHz ELT.

5. On May 22, 1992, we adopted a *Notice of Proposed Rule Making* (*Notice*)[5] proposing to authorize the use of the frequency 406.025 MHz for ELTs. In the *Notice*, we also proposed that ELTs be required to comply with the technical standards in the Radio Technical Commission for Aeronautics (RTCA) document "Minimum Operational Performance Standards 406 MHz Emergency Locator Transmitters (ELTs), Document No. RTCA/DO-204" (RTCA DO-204). Additionally, we sought comment on 1) whether 406 MHz ELTs should be required to have an integral 121.500 MHz homing beacon; 2) whether there are international technical requirements not covered in RTCA's technical standards; 3) whether ELTs capable of operating on 406.025 MHz should be certified as meeting COSPAS/SARSAT standards by an independent laboratory, and finally, 4) whether registration in the NOAA database should be made mandatory for ELTs. In response to the *Notice*, we received nine comments.[6] The commenters favor adopting the rule amendments substantially as proposed.

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[1] Emergency position indicating radiobeacon stations are used to send distress signals that alert search and rescue personnel. In the United States such beacons are named emergency locator transmitters (ELTs) when carried on aircraft and emergency position indicating radiobeacons (EPIRBs) when carried on ships. ELTs and EPIRBs transmit distress signals; EPIRBs on 121.500 MHz, 243.000 MHz and 406.025 MHz and ELTs currently on 121.500 MHz and 243.000 MHz.

[2] These frequencies are allocated internationally for use by emergency beacons such as EPIRBs and ELTs. *See* Radio Regulations, No. 3259, (International Telecommunications Union, 1990). The aviation industry typically refers to these ELTs as 121.5 ELTs.

[3] COSPAS is an acronym for a Russian phrase meaning space system for search and distress vessels. SARSAT stands for search and rescue satellite-aided tracking.

[4] RM-7611, Petition filed on January 17, 1991, by the National Oceanic and Atmospheric Administration of the United States Department of Commerce (NOAA), Public Notice No. 1836 (February 7, 1991)

[5] PR Docket No. 92-125, 7 FCC Rcd 3448 (1992).

[6] The following parties filed comments: NOAA, U.S. Coast Guard, Department of the Air Force, National Aeronautical and Space Administration (NASA), Aircraft Owners and Pilots Association, Air Line Pilots Association, W.A. Street of MPR Teltech Ltd., Al Coppin of MPR Teltech Ltd., and Edward S. Craig.

III. DISCUSSION

A. Use of 406.025 MHz for ELTs

6. The commenters overwhelmingly support authorizing the use of 406.025 MHz for ELTs.[7] The Coast Guard, citing its experience in aeronautical SAR between 1986 and 1991, states it participated in 1715 operations in which aircraft needed assistance, resulting in 726 lives saved.[8] The Coast Guard contends that if the response time to these distress calls could be shortened many more lives could be saved. Based on its experience with the 406 MHz EPIRBs, the Coast Guard believes that the carriage of 406 MHz ELTs will result in much shorter response time in distress cases and concludes that 406.025 MHz should be authorized for ELTs.[9] The Department of the Air Force (Air Force) notes its experience with 121.5 MHz ELTs and states that 406 MHz ELTs have great advantages over 121.5 MHz ELTs.[10] NOAA notes that the results of a study it conducted indicate that additional advantages of the 406 MHz ELT over the 121.5 MHz ELT are a potential savings of an additional nine lives per year as well as an estimated $5.4 million per year in SAR operating costs.[11] Accordingly, we are authorizing the use of 406.025 MHz for ELTs. Operating authority will be subsumed under existing aircraft station licenses, and no application for modification of existing license will be necessary.

B. 121.500 MHz homing

7. The Air Force, Coast Guard and NASA support the requirement that the 406 MHz ELT have an integral 121.500 MHz homing capability. NASA states that federal, state, local and volunteer SAR forces are currently equipped with 121.5 MHz homing equipment but do not have the capability to home on 406.025 MHz. Further, NASA notes that although the 406 MHz beacon is accurate to approximately 2 kilometers, an additional homing signal is needed by rescue personnel in the final phase of the SAR operation. The alternative of homing on the 406 MHz signal is not practical because of the lack of equipment and experience in homing on a burst signal (1/2 second transmission every 50 seconds). Requiring homing on 406 MHz would delay the implementation of 406 MHz ELTs and result in substantial cost to federal, state, local and volunteer SAR organizations.[12] In view of the strong support in the comments, we are requiring that 406 MHz ELTs employ low power 121.500 MHz transmitters for homing. This approach is consistent with the approach taken with the 406 MHz EPIRB for use on board ships and boats.

C. International Technical Standards & Certification by Independent Laboratory

8. In the *Notice* we proposed that ELTs be required to comply with RTCA DO-204. The Coast Guard, NOAA, and NASA filed comments supporting our proposal. MPR Teltech Ltd. (MPR), while agreeing with our proposal, contends that the -50 dB spurious emission limit contained in RTCA DO-204 is unduly restrictive and recommends that it be changed to agree with the 406 MHz EPIRB spurious emission limit of -30 dB. We agree and note that the international Radio Regulations do not specify a limit for spurious emissions from ELTs.[13] We are amending the rules to require compliance with RTCA DO-204 and to reflect the new limit for spurious emissions.

9. We also asked questions about whether there are any international requirements not covered in the RTCA DO-204 technical standards. The commenters agree that the international requirement for certification by an approved COSPAS/SARSAT test facility to meet the COSPAS/SARSAT 406 MHz Distress Beacon Type Approval Standard (C/S T.007) was omitted from RTCA's technical standards. This testing is required to meet U.S. commitments under the COSPAS/SARSAT Intergovernmental Agreement (Agreement). NASA and NOAA emphasize that the United States must meet its commitments to ensure the ELTs are compatible with the COSPAS/SARSAT satellite system.[14] NASA points out that the COSPAS/SARSAT testing procedure examines two important certification requirements, frequency stability and signal coding, thereby assuring that signals transmitted by the beacons are correct and detectable by the satellite.[15] Additionally, the Coast Guard recommends that further electrical and environmental testing be performed by an independent laboratory to ensure reliability.[16] We agree with the commenters' views that 406 MHz ELTs must meet our national requirements as well as be compatible with COSPAS/SARSAT. Accordingly, we are requiring certification by a COSPAS/SARSAT laboratory and an independent laboratory. In view of these two levels of certification, we believe that a third review by the Commission would be redundant and only delay the approval of the equipment for use. Therefore, in order to minimize the burden to the public and eliminate unnecessary regulation we are requiring equipment notification rather than type acceptance of equipment.[17]

D. Registration

10. With regard to the issue of registration, we proposed to treat 406 MHz ELTs the same as we treat 406 MHz EPIRBs. We proposed to require manufacturers to program each 406 MHz ELT with a unique code and to provide each 406 MHz ELT a plate or label containing registration

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[7] A manufacturer, MPR Teltech Ltd., recommends that the 406.025 MHz be authorized and that aircraft voluntarily carry 406 MHz ELTs in lieu of the mandatory 121.5 MHz ELT. While we agree with MPR Teltech Ltd., this is an issue to be decided by the Federal Aviation Administration.

[8] U.S. Coast Guard comments at 1.

[9] U.S. Coast Guard comments at 2.

[10] Air Force at 1.

[11] NOAA comments at 7.

[12] NASA at 2, NOAA at 2, Air Force at 1, Coast Guard at 2, and Coppin of MPR Teltech at 3.

[13] See international Radio Regulations, Appendix 8.

[14] NASA at 3, NOAA at 2 and 3.

[15] NASA at 3.

[16] Coast Guard at 2.

[17] Type acceptance and notification are procedures by which we issue equipment authorizations. *See* 47 C.F.R. § 2.901. For type acceptance, the applicant makes measurements and submits certain representations and test data that demonstrate compliance with technical standards. For notification, the applicant makes measurements and attests that the measurements demonstrate compliance with the technical standards. Test data are not submitted unless specifically requested by the Commission. For both type acceptance and notification, the Commission issues an identification number (FCC ID#).

instructions requested by NOAA. Additionally, we proposed to require manufacturers to include with each marketed 406 MHz ELT a pre-addressed post card soliciting the aircraft owner's name, address, telephone number, identification code and aircraft type for registration in NOAA's database. We proposed, however, that registration be voluntary. The commenters support our proposals except for voluntary registration. They argue that registration should be mandatory. While we are adopting our proposed registration procedures, we note that there is a petition for rule making pending before the Commission (RM-8008)[18] requesting mandatory registration of EPIRBs. The decision on whether registration should be mandatory or voluntary should be the same for both ELTs and EPIRBs. Therefore, we will address the issue of mandatory registration of ELTs in a separate proceeding concerning RM-8008.

IV. ORDERING CLAUSES

11. Accordingly, IT IS ORDERED that, pursuant to the authority contained in Sections 4(i) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i) and 303(r), Part 87 of the Commission's Rules IS AMENDED as set forth in the Appendix below, effective 30 days after publication in the Federal Register.

12. IT IS FURTHER ORDERED that this proceeding IS TERMINATED.

13. For further information, contact James Shaffer, Private Radio Bureau, Federal Communications Commission, 1919 M ST, NW, Washington, DC 20554; telephone 202-632-7197.

FEDERAL COMMUNICATIONS COMMISSION

Donna R. Searcy
Secretary

FINAL RULES

Part 87 of Chapter 1 of Title 47 of the Code of Federal Regulations is amended as follows:

Part 87 - AVIATION SERVICES

1. The authority citation for Part 87 continues to read as follows:

AUTHORITY: 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303, unless otherwise noted. Interpret or apply 48 Stat. 1064-1068, 1081-1105, as amended; 47 U.S.C. 151-156, 301-609.

2. In Section 87.133(a) the stability table is amended by adding a new entry at the end of paragraph (6) to read as follows:

§ 87.133 Frequency stability.

(a) * * *

Frequency band (lower limit exclusive, upper limit inclusive), and categories of stations.	Tolerance[1]	Tolerance[2]
* * * * *		
(6) Band -137 to 470 MHz:		
* * *		
Emergency locator transmitters on 406 MHz	N/A	5
. .		
* * * * *		

3. In Section 87.137(a) the emission table is amended by adding a new entry in alphabetical order to read as follows:

§ 87.137 Types of emission.

(a) * * *

		Authorized bandwidth (kilohertz)		
Class of emission	Emission designator	Below 50 MHz	Above 50 MHz	Frequency deviation
* * * * *				
G1D	16K0G1D		20 kHz	
* * * * *				

4. In Section 87.139 paragraph (h) introductory text is revised to read as follows:

§ 87.139 Emission limitations.

* * * * *

(h) For ELTs operating on 121.500 MHz, 243.000 MHz and 406.025 MHz the mean power of any emission must be attenuated below the mean power of the transmitter (pY) as follows:

* * * * *

5. Section 87.145 is amended by adding a new paragraph (d)(4) to read as follows:

§ 87.145 Acceptability of transmitters for licensing.

* * * * *

(d)* * *

(4) ELTs notified in accordance with § 87.147(e).

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6. Section 87.147 is amended by revising the section heading, revising the first sentence of paragraph (a), revising the first sentence of paragraph (b), revising paragraph (d) introductory text, and adding a new paragraph (e) to read as follows:

§ 87.147 Authorization of equipment.

[18] Petition filed on May 27, 1992, by the U.S. Coast Guard, Public Notice No. 1894.

(a) Type acceptance or notification may be requested by following the type acceptance or notification procedure in Part 2 of this Chapter. * * *

(b) ELTs that operate on the frequencies 121.500 MHz and 243.000 MHz that are manufactured after October 1, 1988, must meet the power output characteristics contained in paragraph 87.141(i) when tested in accordance with the Signal Enhancement Test contained in Subpart N, Part 2 of this Chapter. * * *

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(d) An applicant for type acceptance of equipment intended for transmission in any of the frequency bands listed in paragraph (d)(3) of this section, must notify the FAA of the filing of a type acceptance application. The letter of notification must be mailed to: FAA, Spectrum Engineering Division, 800 Independence Avenue SW., Washington, DC 20591 no later than the date of filing of the application with the Commission.

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(e) Application for notification of ELTs capable of operating on the frequency 406.025 MHz must include sufficient documentation to show that the ELT meets the requirements of § 87.199(a). A letter notifying the FAA of the filing of an application for a grant of notification must be mailed to: FAA, Spectrum Engineering Division, 800 Independence Avenue SW., Washington, DC 20591 no later than the date of filing of the application with the Commission.

7. In Section 87.173 the frequency table in paragraph (b) is amended by adding a new entry in numerical order to read as follows:

§ 87.173 Frequencies.

* * * * *

(b) * * *

Frequency or frequency band	Subpart	Class of station	Remarks
* * * * *			
406.025 MHz . .	F, G, H, I, J, K, M, O	MA, FAU, FAE, FAT, FAS, FAC, FAM, FAP	Emergency and distress

* * * * *

8. In section 87.187 existing paragraphs (m) through (bb) are redesignated (n) through (cc) and a new paragraph (m) is added to read as follows:

§ 87.187 Frequencies.

* * * * *

(m) The frequency 406.025 MHz is an emergency and distress frequency available for use by emergency locator transmitters. Use of this frequency must be limited to transmissions of distress and safety communications.

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9. In Section 87.195 paragraph (a) is amended by adding a new last sentence to read as follows:

§ 87.195 Frequencies.

(a) * * * ELTs that transmit on the frequency 406.025 MHz use G1D emission.

* * * * *

10. A new Section 87.199 is added to Subpart F to read as follows:

§ 87.199 Special requirements for 406.025 MHz ELTs.

(a) Except for the spurious emission limits specified in § 87.139(h), 406.025 MHz ELTs must meet all the technical and performance standards contained in the Radio Technical Commission for Aeronautics document titled "Minimum Operational Performance Standards 406 MHz Emergency Locator Transmitters (ELT)" Document No. RTCA/DO-204 dated September 29, 1989. This RTCA document is incorporated by reference in accordance with 5 U.S.C. 552(a). The document is available for inspection at Commission headquarters in Washington, D.C. or may be obtained from the Department of Transportation, Federal Aviation Administration, Office of Airworthiness, 800 Independence Avenue SW, Washington, D.C. 20591.

(b) The 406.025 MHz ELT must contain as an integral part a homing beacon operating only on 121.500 MHz that meets all the requirements described in the RTCA Recommended Standards document described in paragraph (a) of this section. The 121.500 MHz homing beacon must have a continuous duty cycle that may be interrupted during the transmission of the 406.025 MHz signal only.

(c) Prior to submitting a notification application for a 406.025 MHz ELT, the ELT must be certified by a test facility recognized by one of the COSPAS/SARSAT Partners that the equipment satisfies the design characteristics associated with the COSPAS/SARSAT document COSPAS/SARSAT 406 MHz Distress Beacon Type Approval Standard (C/S T.007). Additionally, an independent test facility must certify that the ELT complies with the electrical and environmental standards associated with the RTCA Recommended Standards.

(d) The procedures for obtaining a grant of notification from the Commission are contained in Subpart J of Part 2 of this Chapter.

(e) An identification code, issued by the National Oceanic and Atmospheric Administration (NOAA), the United States Program Manager for the 406.025 MHz COSPAS/SARSAT satellite system, must be programmed in each ELT unit to establish a unique identification for each ELT station. With each marketable ELT unit the manufacturer or grantee must include a postage pre-paid registration card addressed to: NOAA/SARSAT Operations Division, E/SP3, Federal Building 4, Washington, D.C. 20233. The registration card must include the ELT identification code and must request the owner's name, address, telephone number and type of aircraft.

(f) In addition to the identification plate or label requirements contained in §§ 2.925, 2.926 and 2.979 of this chapter, each 406.025 MHz ELT must be provided on the outside with a clearly discernable permanent plate or label containing the following statement: "It is imperative that the owner of this 406.025 MHz ELT register the NOAA identification code contained on this label with the National Oceanic and Atmospheric Administration (NOAA) whose address is: NOAA, NOAA/SARSAT Operations Division, E/SP3, Federal Building 4, Washington, D.C. 20233."

(g) For 406.025 MHz ELTs whose identification code can be changed after manufacture, the identification code shown on the plate or label must be easily replaceable using commonly available tools.